Generic Material Handling Standard Laboratory Module (SLM™)

General Overview of the Generic Material Handling SLM

The tasks of Generic Material Handling SLM include the retrieving and tracking of samples, vials used in gas chromatography, clean and used glassware, filters, and contaminant waste residuals.

Environmental Protection Agency (EPA) Method

Not applicable.

Standard Analysis Method (SAM)

This SLM will be used in various configurations in all the Contaminant Analysis Automation (CAA) SAM systems.

Advantages

The flexibility of this module makes it adaptable to all of the envisioned SAMs. Materials required by a SAM system or waste products generated are manipulated by this module to ensure smooth operation. Its stand-alone design enables this SLM to handle up to 450 samples without intervention. The system is a compact, modular unit that is easily installed, operated, and maintained. Design of this SLM made use of off-the-shelf technology. The Generic Materials Handling SLM has an embedded PC controller.

General Description of the Generic Material Handling SLM

The Generic Material Handling SLM is composed of seven major subsystems. The structure subsystem and the power and communication subsystem are relevant to all classes of material handling systems. The motive subsystems are two individual elevators, a Ferris wheel system, and a conveyor system. The Ferris wheel subsystem (FWS) serves as the storage facility. This design allows for the maximum density of storage, it can be easily isolated for contaminant storage, and it slides in for installation or out for maintenance. The two elevators provide access from the Generic Material Handling System to the below-the-table robot, to the above-the-table robot, or to and from the FWS. The conveyor subsystem provides for tray access from one end of the table to the other. This access is critical to future developments in glassware cleaning and contaminant or waste disposal. The final subsystem of the Generic Material Handling System is the controller subsystem, which provides the local intelligence for this four-degree-of-freedom system, and supports the required stand-alone operation under the CAA paradigm.

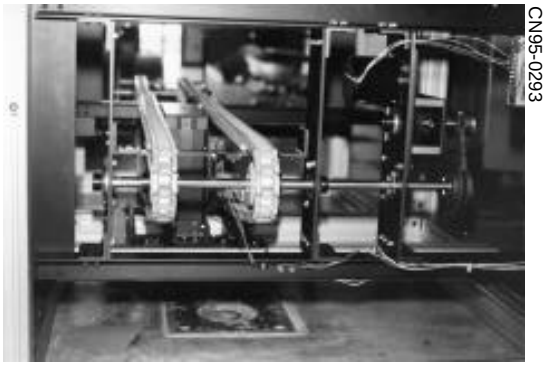
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Figure 1. Generic Material Handling SLM tray conveyor.

Status

A fully functional Generic Material Handling System has been incorporated into the polychlorinated biphenyl SAM. The entire unit is fully documented.

Industrial Partner

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Developers

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